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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/955,659	09/19/2001	Louis E. Sulfstede	L7039-0001	1160

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EXAMINER	
JARRETT, RYAN A	

ART UNIT	PAPER NUMBER
2125	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/955,659	SULFSTEDE, LOUIS E.	
	Examiner	Art Unit	
	Ryan A. Jarrett	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 September 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 September 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: On page 13 line 2, the word "System" should be changed to "Analyzer", and on page 13 line 4, the word "Analyzer" should be changed to "System".

Drawings

2. The application has been filed with informal drawings which are acceptable for examination purposes only.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 5 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification does not enable the detachably connected control unit being capable of **controlling** a plurality of control parameters through the internal control system associated with the HVAC system. In this "System" or "In-Line" mode of operation, the specification only enables a **monitoring** of the performance characteristics of the HVAC system.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 16, it is not clear what is meant by "Y and G threshold voltage".

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-4, 6, 7, 10-12, 18, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Key et al. U.S. Patent No. 6,179,214. Key et al. discloses a diagnostic apparatus for examining a heating, ventilation, and air conditioning (HVAC) system, said apparatus comprising: a control unit detachably connected to the HVAC system, said control unit controlling a plurality of control parameters of the HVAC system; and means for said control unit to monitor a plurality of performance characteristics of the HVAC system; whereby said control unit monitors the plurality of performance characteristics while controlling the HVAC system to provide a diagnostic check of the HVAC system; wherein said control unit controls a plurality of control parameters through a plurality of

control function activators providing control functions to the HVAC system; wherein said control function activators provide control functions directly to the HVAC system (e.g. col. 2 lines 10-45, col. 3 lines 7-11, col. 3 line 63 – col. 4 line 48, col. 4 line 62 – col. 5 line 5, Fig. 3, Fig. 4);

an apparatus for examining a heating, ventilation, and air conditioning (HVAC) system, said apparatus comprising: a portable control unit detachably coupled to the HVAC system, said control unit monitoring a plurality of performance characteristics associated with a plurality of control parameters controlling the HVAC system; and means for controlling the HVAC system within the portable control unit through the plurality of control parameters of the HVAC system; whereby said control unit monitors the plurality of performance characteristics while controlling the HVAC system to determine a status of the HVAC system (e.g. col. 2 lines 10-45, col. 3 lines 7-11, col. 3 line 63 – col. 4 line 48, col. 4 line 62 – col. 5 line 5, Fig. 3, Fig. 4);

a diagnostic apparatus for examination of a heating, ventilation, and air conditioning (HVAC) system, said apparatus comprising: a control unit having connecting means to the HVAC system, said control unit controlling a plurality of control parameters of the HVAC system through a plurality of control function activators providing control functions to the HVAC system, said control unit variably controlling at least one control parameter; and means for said control unit to monitor a plurality of performance characteristics of the HVAC system; whereby said control unit monitors the plurality of performance characteristics while controlling the HVAC system to provide a

diagnostic check of the HVAC system (e.g. col. 2 lines 10-45, col. 3 lines 7-11, col. 3 line 63 – col. 4 line 48, col. 4 line 62 – col. 5 line 5, col. 5 lines 54-59, Fig. 3, Fig. 4);

wherein said control unit controls a plurality of control parameters as a control system separate from internal controls of the HVAC system (e.g. col. 4 lines 36-38, col. 5 lines 54-59);

wherein said control unit includes a visual indication of at least one properly functioning control circuit associated with at least one of the plurality of control parameters of the HVAC system (col. 5 lines 23-43);

wherein said control unit includes means for variably controlling at least one control parameter of the HVAC system (e.g. col. 5 lines 54-59);

wherein said means for said control unit to monitor a plurality of performance characteristics of the HVAC system includes a display providing a graphical representation of at least one performance characteristic (e.g. col. 2 lines 53-59);

wherein said control unit is powered from a power source separate from any power source powering the HVAC system (e.g. col. 6 line 40, col. 6 lines 48-52, Fig. 4 #46);

wherein said control unit is powered by a power source powering the HVAC system (e.g. col. 6 lines 44-48, col. 6 line 65 – col. 7 line 9, Fig. 4 #74-1).

9. Claims 1-4, 6, 7, 10, 12, 18, 20 (*additionally rejected*), and **claims 13 and 19** are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Wills U.S. Patent No. 4,146,085 (e.g. col. 1 line 50 – col. 2 line 34, col. 4 lines 9-15, col. 6 lines 18-53, col. 7 lines 4-5, col. 7 lines 56-60, col. 8 lines 14-17, Fig. 5, Fig. 6).

Regarding claims 13 and 19, Wills additionally discloses that said control unit is connected to the HVAC system with a first cable extending from said control unit to a control system of the HVAC system and a second cable connecting said control unit to a motor driving the HVAC system; wherein the HVAC system includes a control system controlling a motor within the HVAC system; and said control unit includes a selectable switch, said switch allowing said control unit to operate in a first mode to monitor a plurality of interconnected functions between the HVAC system and the motor and a second mode to disconnect the control system from operating and controlling the motor; whereby switching between the first mode and the second mode provides means for isolating a location of a malfunction occurring within the HVAC system (e.g. col. 5 lines 40-57, claim 1, claim 4, claim 5, Fig. 5).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Key et al. (or Wills) as applied to claim 1 above, and further in view of Jayanth U.S. Patent No. 6,324,854. Key et al. (or Wills) does not disclose monitoring a voltage associated with the HVAC system or monitoring a revolution per minute count of a motor driving the HVAC system. However, Jayanth discloses an air-conditioning servicing system, including monitoring a voltage associated with the HVAC system and

monitoring a revolution per minute count of a motor driving the HVAC system using a hand-held computer diagnostic device (e.g. col. 2 lines 34-60, col. 3 line 61 – col. 4 line 23, col. 4 lines 51-57, Fig. 3). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Key et al. (or Wills) with Jayanth since Jayanth teaches that this type of monitoring data can provide valuable information regarding the cause of a problem in an HVAC system.

12. Claims 8 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Key et al. (or Wills) as applied to claims 1 and 7 above, and further in view of Pham et al. US 2001/0045097. Key et al. (or Wills) does not disclose a pulse width adjuster for variably controlling at least one control parameter of the HVAC system, or a PWM duty cycle generator. However, Pham et al. discloses an adaptive control for a refrigeration system using a pulse width modulated duty cycle scroll compressor. The system of Pham et al. includes a diagnostic means for evaluating the PWM compressor and electronic stepper regulator valves. Here, the duty cycle (or loading) can be varied between 0% and 100% in order to test for failures in the system (e.g. [0050], [0051], [0057]-[0061], [0066]-[0068], [0075]-[0079], [0103], [0139]-[0165]). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the portable, hand-held control module of Key et al. (or Wills) with Pham et al. in order to test the functionality of the HVAC system of Key et al. (or Willis) by adjusting the duty cycle of the compressor, as taught by Pham et al.

13. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Key et al. (or Wills) as applied to claim 7 above, and further in view of Kikuiri et al. U.S. Patent No.

5,493,868. Key et al. (or Wills) does not disclose a variable voltage threshold function adjuster. However, Kikuiri et al. discloses an air-conditioning diagnostic tool that includes a means for adjusting the voltage threshold, or input voltage level, of the compressor (e.g. col. 2 line 43 – col. 3 line 50, col. 7 lines 22-35, col. 8 line 18 – col. 9 line 26, Fig. 8, Fig. 10, claim 5, claim 6). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the hand-held controller of Key et al. (or Wills) with Kikuiri et al. to include a voltage threshold adjusting means since Kikuiri et al. teaches that this feature can prevent excessively high voltages that can burn out motor windings, or excessively low voltages that can reduce the driving efficiency of the motor inverter (e.g. col. 1 lines 45-60). Additionally, Kikuiri et al. teaches that this feature can be used as a diagnostic aid to detect abnormal states of the air conditioner (e.g. col. 6 lines 32-54).

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Stamp, Jr. et al. U.S. Patent No. 4,381,549

Lord U.S. Patent No. 4,538,419

Kirkpatrick et al. U.S. Patent No. 5,463,559

Ficchi, Jr. et al. U.S. Patent No. 5,816,059

Morgan US 2002/0040280

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan A. Jarrett whose telephone number is (703) 308-4739. The examiner can normally be reached on 10:00-6:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on (703) 308-0538. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

raj
12/3/03

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